REMARKS

In an office action mailed January 13, 2003, claims 15-31 have been rejected. By this amendment, claims 15, 21 and 27-31 have been amended. New claim 32 has been added. Claims 22-26 have been cancelled. Claims 15-21 and 27-32 are pending in the application.

Claims 15, 21 and 27-31 have been amended to add language that clearly conveys that the alkaline treatment occurs after oxidation is complete. Support for the amendments to claims 15, 21 and 27-31 can be found, for example, on page 10, lines 17-19 and page 15, lines 9-10 of the application.

Claim 32 has been added. Support for claim 32 can be found on page 8, lines 34-36.

According to an advisory action mailed June 27, 2003, the response to the final office action filed June 16, 2003 did not put the application in condition for allowance. In order to avoid abandonment of the application, Applicants are concurrently filing a request for continued examination.

Rejections Under §103(a)

In the final office action, claims 15-20 have been rejected under §103(a) as being unpatentable over Wikstrom in view of Whitaker or Just. The Examiner recognizes that Wikstrom does not disclose an alkaline treatment performed at a pH higher than 10.5 for at least 15 minutes at a temperature of 20-50° C.

The Examiner cites Whitaker or Just as disclosing oxidation processes that utilize alkaline conditions as in the present invention. According to the office action, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the alkaline and sodium hypochlorite treatments of Whitaker and Just in the process of Wikstrom. Applicant respectfully submits that, upon combining the teachings of Wikstrom with Whitaker or Just, one would not arrive at the present invention.

As was explained during a telephone discussion with Examiner White on June 11, 2003, Applicants claimed process requires two steps:

(1) treating the APS with an alkali metal hypochlorite at a pH between 6.5 to 8.5 to form an oxidized starch product;

and

(2) subjecting the oxidized starch product to an alkaline treatment comprising keeping the starch product at a temperature of 20-50°C and a pH of higher than 10, for at least 15 minutes.

In contrast, both Whitaker and Just utilize alkaline conditions during the oxidation process. See, for example, col. 1, lines 40-43 of Whitaker, and col. 8, lines 21-28 of Just.

According to the advisory action, the above argument is not persuasive. It is the Examiner's position that Just discloses in Example 1 "that after sodium hypochlorite addition was completed, the pH was maintained by incremental sodium hydroxide addition."

Applicants respectfully disagree with the Examiner's reading of Just. Column 7, lines 28-32 of Just (Example 1) states:

> After the sodium hypochlorite addition was completed, the Ph was maintained at about 8.5 to 9.0 by incremental sodium hydroxide (above solution) addition and agitation was continued at 50°C until all the bleach was consumed.(emphasis added).

The oxidation reaction is complete when all of the bleach is consumed. Once all of the bleach is consumed, no further oxidation can occur.

In Just, addition of sodium hydroxide (alkaline treatment) occurs after the sodium hypochlorite (oxidizing agent) addition is complete. Completing the addition of oxidizing agent does not equate completion of the oxidation reaction. The oxidation reaction continues until all of the oxidizing agent is consumed.

Just teaches adding the sodium hydroxide while the oxidation reaction is still underway, and continues to add sodium hydroxide until the oxidation reaction is completed (i.e. when all the bleach is consumed).

In stark contrast, the present invention avoids adding sodium hydroxide until the oxidation reaction is complete (i.e. no chlorine detected). See page 15, lines 9-10, 27-28; page 16, lines 5-6, lines 24-25; page 17, lines 4-5, lines 23-24; page 18, lines 2-3.

Applicants have unexpectedly discovered that adding the sodium hydroxide after oxidation is complete, has a highly beneficial effect on the viscosity stability of the oxidized amylopectin potato starch. For example, an oxidized starch according to the invention may be stored at increases temperatures, e.g. 80°C, for prolonged periods of time without substantially any change in the viscosity of the product. See page 10, lines 22-28 of the application.

Table II demonstrates the increased viscosity stability of amylopectin potato starch (APS) subjected to the claimed oxidation process as compared to APS subjected to an oxidation process as disclosed in Just or Whitaker.

Furthermore, the post-oxidation alkaline treatment of the present invention requires a pH higher than 10. Just discloses a pH of about 8.5 to 9.0, during the oxidation reaction. During a telephone discussion with Examiner White (which Applicants are grateful for) on July 16, 2003, Applicants representative pointed to the difference in pH.

According to Examiner White, the pH difference from 9 to 10 is within the purview of the skilled practitioner, and does not put the claims in condition for allowance. Applicants respectfully disagree.

As discussed in the application beginning on page 3, line 19 and continuing to page 4, selecting an appropriate pH for oxidizing starch constitutes a compromise between efficient starch degradation and stability of the viscosity of the oxidized starch.

For viscosity stability, the oxidation process is usually carried out at a pH of higher than 8.5. However, the high pH adversely affects reaction rate and requires high amounts of oxidizing agent.

The present invention overcomes the problems associated with using a high pH (> 8.5) during oxidation. Applicants have surprisingly discovered that oxidation of amylopectin potato starch (APS) by subjecting the oxidized starch to an alkaline treatment at a pH higher than 10.0 avoids the need to use large amounts of oxidizing agent, and provides a shorter reaction time. See Table II on page 19 of the application.

It can be appreciated from Table II that oxidized starches nos. 1 and 3 have the greatest viscosity after 20 hours. Starches nos. 1 and 3 are APS oxidized using the least amount of sodium hypochlorite (10), and subject to alkaline post-treatment (pH of 10.5 for 2 hours).

There is simply no suggestion in any of the cited references to utilize a pH of greater than 10.0 during an alkaline treatment after oxidation is complete.

In sum, Just does not teach a process for oxidizing starch that utilizes an alkaline treatment after the oxidation reaction is complete. Just also does not disclose or suggest oxidizing amylopectin potato starch (APS).

Neither Whitaker nor Wikstrom disclose a process for oxidizing starch that utilizes an alkaline treatment after the oxidation reaction is complete. Upon combining teaching of Just, Whitaker and Wikstrom, the claimed invention is not disclosed or suggested. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejections based on Just, Whitaker and Wikstrom.

Claims 21-27 and 30 have been rejected under §103 as being unpatentable over Wikstrom. In the interest of moving the application towards allowance, claims 22-26 have been cancelled. Accordingly, the rejection of claims 22-26 under §103 based on Wikstrom has been rendered moot.

In the office action, the Examiner contends that claims 21, 27 and 30 differ from Wikstrom by claiming process steps, however, "process limitations cannot impart patentability to a product that is not patentably distinguished over the prior art." [citations omitted.]

According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the starch of Wikstrom and expect similar finishing properties as the claimed invention.

Claims 28, 29 and 31 have been rejected under §103 as being unpatentable over EP 0799837 to Huizenga. According to the Examiner, Huizenga discloses compositions that comprise an amylopectin potato starch that may be used in different products including food

products and adhesives, which allegedly embraces the adhesive and food additive of claims 28 and 31, respectively. Applicant respectfully disagrees.

The two-step claimed process is not disclosed or suggested by Wikstrom or Huizenga. Moreover, the oxidized starch product obtained by the claimed process is superior to the starch products of both Wikstrom and Huizenga, as illustrated by the examples provided in the application and discussed below.

Importantly, using alkaline conditions during the oxidation reaction requires relatively high amounts of oxidizing agent (e.g. hypochlorite) to achieve the desired viscosity. As discussed above, using excessive oxidizing agent is undesirable, for example, for public health and environmental reasons..

Applicants have surprisingly discovered a two step process that utilizes significantly less oxidizing agent than the prior art. New claim 32 has been added which recites the amount of oxidizing agent required.

As mentioned above, Table II of the application illustrates the superiority of oxidized starches obtained by the claimed process as compared to the prior art.

Oxidized starch products obtained according to the teachings of Wikstrom, Just and Whitaker (akin to starch 2 discussed above), have considerably lower viscosity stability as compared to a starch obtained by the present invention. Thus, an oxidized starch product of

Wikstrom, Just or Whiatker will not have similar properties (e.g. finishing agent) as a starch product obtained by the present invention.

Additionally, the starch product of Huizenga, which is not oxidized or subjected to an alkaline post-treatment, does not have the same or similar properties as a starch product obtained by the present invention. Therefore, there is no expectation that a starch product of Huizenga will not have similar dispersive properties as a starch product obtained by the present invention.

Accordingly, Applicant respectfully requests that the rejections under §103 of claims 21-27 and 30 based on Wikstrom, and claims 28, 29 and 31 based on Huizenga, be reconsidered and withdrawn.

In light of the foregoing amendments and remarks, Applicants respectfully submit that the application is now in condition for allowance. If the Examiner believes a telephone discussion with the Applicant's representative would be of assistance, she is invited to contact the undersigned at her convenience.

Respectfully submitted,

Lauren T. Emr
Registration Number 46,139

HOFFMANN & BARON, LLP
6900 Jericho Turnpike
Syosset, New York 11791
Telephone: 516-822-3550
Facsimile: 516-822-3582
LTE:jlw